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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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ART UNIT	PAPER NUMBER
2623	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/882,036	PAUL ET AL.	
	Examiner	Art Unit	
	Son P. Huynh	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 24-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 24-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 2, 2007 has been entered.

Response to Arguments

2. Applicant's arguments filed December 29, 2006 have been fully considered but they are not persuasive.

In response to Applicant's argument there is no teaching in Masaki et al. that the video frame in column 68, lines 24 and 25 is a "high priority" frame (page 2, paragraph 3), the video frame that has a priority area and non-priority area is not ever taught as being a "high priority frame" (page 4, paragraph 1), the Examiner respectfully traverses.

The Examiner relies on Masaki for the teaching of the additional high priority frames are encoded as lower quality than is generally used for high priority frames.
Masaki discloses encoding, transmitting and dropping frames of video (see include, but are not limited to, col. 60, lines 12-23, lines 50-65, col. 61, lines 1-67). Thus, the frame, including high priority area, transmitted to the receiving device is interpreted as "high priority frames". Masaki further discloses in error mode in response to error notice, the video frame inputted from the video input portion 11 is quantized with a quantization step size larger than in the error free mode (see include, but are not limited to, col. 67, lines 10-67); the video frame may be divided into a priority area and non-priority area and in error mode, the quantization step for the non-priority area is set larger or the coding device may be controlled not to perform coding operation and transmission for non-priority area (see include, but are not limited to, 68, lines 12-56). As a result of quantization step is set larger for the frame or the coding device controlled no perform coding operation and transmission for non-priority area, the frames to be transmitted are encoded as lower quality (quantization step size larger or no data for non-priority area) than is generally used for high priority frames (frames transmitted in error free mode). In addition, the "high priority frame" is taught by Li's reference (see the Final Office Action, dated 3/1/2007, pages 9-10).

Thus, Masaki discloses additional high priority frames are encoded as lower quality than is generally used for high priority frames (interpreted as frames are encoded and transmitted with larger quantization step size or without data for non-priority area in

error mode compared to frames encoded and transmitted with normal quantization step size or with all data of non-priority area in error free mode).

For the reasons given above, rejections on claims 1-8, 24-42 are discussed below.

Claims 9-23 have been canceled.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-7, 24-33, 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 6,275,531) in view of Chiu et al. (US 6,233,283) and Masaki et al. (US 6,356,309).

Regarding claim 1, Li discloses encoding a plurality of frames as either high priority frames (e.g. base layers) or low priority frames (e.g. enhancement layers) – see figure 1; dropping low priority frames (the number of enhancement layers are determined or limited by the network that provides the transmission channel to the destination point.

While the base layer bitstream is always transmitted to the destination point, omitting one or more enhancement layers due to a multitude of reasons such as the bandwidth of the channel, the destination device itself – see col. 3, lines 17-58). Li also disclose feedback comprises information regarding the transmission channel bandwidth, destination device itself, etc. is received – (col. 3, lines 17-58). However, Li does not specifically disclose receiving information about the loss of low priority frames by a network; and if more than a threshold amount of low frames are being lost, encoding an additional number of the low priority frames as high priority frames, wherein the additional high priority frames are encoded at a lower quality than is generally used for high priority frames.

Chiu, in an analogous art, discloses receiving information about loss of low priority frames by the network (e.g. receiving information about loss of number of macroblocks of error signal D by the network via feedback loop 16- figure, col. 3, line 5-col. 4, line 38); and if more than a threshold amount of low priority frames are being lost, encoding an additional number of the low priority frames as high priority frames (interpreted as the perceptual preprocessor 50 determines that the loss of number of macroblocks of error signal D is more than threshold n1, the error signal D from the frame is directed to encoder branch 12 (used to encoded signal as base layer-high priority) for encoding as high priority and retransmit to the receiver – see col. 3, lines 30-38; col. 4, lines 18-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li to use **the teaching** as taught by Chiu in order to minimize signal interruption, and furthermore increase possibility that

the missing frame is received by a receiver (col. 4, lines 30-42). Chiu further discloses the encoder branch 12 for encoding frame onto base layer (high priority frame) comprises quantizer 22; the quantizer 22 has an adjustable step size to vary the quantization of the transformed error signal between a coarse step and a fine step (col. 3, lines 45-46). However, Li in view of Chiu does not specifically disclose the additional high priority frames (error signal D for missing frames) are encoded as lower quality than is generally used for high priority frames (used for encoding frames into base layer as high priority frames – col. 3, lines 30-39);

Masaki discloses in response to receiving the error rate larger than threshold, the quantization step for the video frame or for non-priority area is set larger or coding device does not perform operation and transmission for non-priority area (see including, but is not limited to, col. 67, lines 10-35; col. 68, lines 25-59). As a result of setting the size of quantization step larger or not to perform operation and transmission operation for non-priority area, the frames to be transmitted are encoded as a lower quality (e.g. coarse, no data for non-priority area) than is generally used for the frames to be encoded (e.g., in error free mode). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li in view of Chiu's teaching to use the teaching as taught by Masaki (set the quantization step larger during error mode) in order to minimize/suppress delay time so that a moving picture with smooth movement (desired quality) can be displayed on the receiving side...(col. 9, lines 40-47).

Regarding claim 2, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses Li also disclose the encoding layers 30 or 40 in negotiation with the network and intermediate devices determine the number N of bitstream layers t be generated according to transmission channel bandwidth, destination device itself, etc. is received – (col. 3, lines 17-58, col. 5, lines 47-67). It is obvious that a feedback (about the transmission channel bandwidth, network, etc.) is received from the network which comprises a response to a request for information on whether the network currently has available capacity to transmit additional high priority traffic to improve quality of picture.

Alternatively, Masaki further discloses the coding device monitors the error signal/notice from receiving device based on error rate and switching between error mode and error free mode in response to the error signal (col. 67, lines 67-67). Inherently, the feedback (error signal/notice) is received from the network which comprises a response to a request for information on whether the network currently has available capacity to transmit additional high priority traffic.

Regarding claim 3, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses

receiving a frame of video data to be encoded (receiving frame of video data from original video input 20 – figure 1);

encoding and transmitting the frame as a high priority video coded frame (i.e. base layer, enhancement layer 1, etc.) if permission was granted to send high priority

data (i.e. possible bandwidth, or no congestion, or other physical constraints (figure 1, col. 3, lines 30-58, col. 5, line 57-col. 6, line 15). Li further discloses negotiation with the network to determine condition of network to send base layer and high priority enhancement layer (col. 5, line 48-col. 6, line 7). Inherently, the encoding layers request permission and receiving response to the request to send data (as high priority data i.e., for sending base layer) over network.

Regarding claim 4, Li in view of Chiu and Masaki teaches a method as discussed in claim . Li further discloses encoding and transmitting the frame as a low priority frame if permission was not granted to send high priority data (i.e. encoding the frame as enhancement layer N, which can be dropped if there is no bandwidth available – col. 3, lines 16-27; col. 5, lines 40-67).

Regarding claim 5, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses deleting (dropping/omitting) the video coded frame from transmission if permission was not granted to send high priority data (col. 3, lines 16-27, col. 5, lines 40-67).

Regarding claim 6, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses requesting permission to send high priority data (negotiation with the network to send base layer and high priority enhancement layer – col. 5, lines 47-67);

encoding a high priority video frame at substantially the same time as the requesting permission to transmit high priority data (encoding a video layer substantially the same time as the negotiation with the network and intermediated device to determine the number of N of bitstreams layer to be generated and layers to be transmitted – col. 5, lines 47-67); and

transmitting the frame as a high priority video coded frame (i.e. base layer, enhancement layer 1, etc.) if permission was granted to send high priority data (i.e. possible bandwidth, or no congestion, or other physical constraints (figure 1, col. 3, lines 30-58, col. 5, line 57-col. 6, line 15); and

deleting (dropping/omitting) the video coded frame from transmission if permission was not granted to send high priority data (col. 3, lines 16-27, col. 5, lines 40-67). Li does not specifically disclose buffer the frames.

Masaki further discloses buffering the video frame at substantially the same time as requesting permission to transmit data (buffering the video frames in temporary buffer, transmission buffer, or retransmission buffer at substantially the same time as requesting permission to transmit the data– see including, but is not limited to figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li in view of Chiu's teaching (discussed above) and Masaki's teaching (discussed above) to use the teaching as further taught by Masaki in order to prevent overflow/underflow of data.

Regarding claim 7, Li in view of Chiu and Masaki teaches a method as discussed in claim 1. Li further discloses encoding as high priority frames all video frames that are to be transmitted (encoding original video as frames of N bitstream layers that are to be transmitted – figure 1);

for each of the coded frames:

determining permission to send high priority data (determining condition of transmission channel to send the frame – col. 5, line 40-col. 6, line 7);

transmitting the frame as a high priority frame if permission to transmit high priority data was granted (e.g., transmitting the frame if predetermined bandwidth of transmission channel is available – col. 5, line 40-col. 6, line 7); and

transmitting the fame as a low priority frame if permission to transmit high priority data was not granted (for example, transmitting frames in N-M bitstream layers as low priority (the bitstream layer can be dropped/omitted) if there is not enough available bandwidth – col. 3, lines 17-42; col. 5, line 47-col. 6, line 7). Li further discloses the encoder layers in negotiation with the network and intermediate devices determine the number of the bitstream layers to be generated (col. 5, lines 47-55). Inherently, encoder layers request permission to send data.

Regarding claim 24, the limitations that correspond to the limitations of claim 1 are analyzed as discussed with respect to the rejection of claim 1. Li further discloses the encoder layers in negotiation with the network and intermediate devices determine the number N of bitstream layers to be generated (col. 5, lines 47-67). Inherently,

information from the network on how much bandwidth is allocated to the encoder for high priority frames is received (e.g., receiving information of bandwidth of transmission channel, network, intermediate device, destination device capabilities, etc. for number of frames, including high priority frames -col. 3, lines 17-67).

Regarding claim 25, Li in view of Chiu and Masaki teaches a method as discussed in claim 24. Chiu further discloses information about loss of low priority frames by the network is received as network feedback (e.g. feedback loop 16 – figure).

Alternatively, Masaki further discloses information about loss of frame by the network is received as network feedback (i.e. error signal/notice/retransmission request from receiving device – see including, but is not limited to, col. 67, lines 10-52).

Regarding claim 26, Li in view of Chiu and Masaki teaches a method as discussed in claim 24. Chiu further discloses the perceptual preprocessor receives feedback signal and determines whether or not the corrupted framed should be retransmitted (col. 4, lines 17-38). It is obvious that the information about loss of frames by the network is received using Real Time Control Protocol to fix the error immediately, thereby improve efficiency in data transmission and quality of services.

Regarding claims 27-33, the limitations as claimed are directed toward embodying the method of claims 1-7 in "computer readable medium". It would have been obvious to embody the procedures of Li in view of Chiu's teaching and Masaki's teaching as

discussed in claim 1-7 in a "computer readable medium" in order that the instructions could be automatically performed by a processor.

Regarding claims 34-41, the limitations of the computing device as claimed correspond to the limitations of the method as claims in claims 1-7, and are analyzed as discussed with respect to the rejection of claims 1-7.

5. Claims 8, 34 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 6,275,531) in view of Chiu et al. (US 6,233,283) and Masaki et al. (US 6,356,309) as applied to claim 7, 33, 41 above, and further in view of Zhang et al. (US 6,816,194).

Regarding claim 8, Li in view of Chiu and Masaki teaches a method as discussed in claim 7. Li further discloses base layer bitstream is guaranteed (col. 5, line 47-55). However, neither references specifically discloses high priority frames are transmitted over the network separately than the low priority frames, wherein the high priority frames are transmitted over the network using a guaranteed quality of service trunk, and wherein the low priority frames are transmitted over the network on a best effort truck.

Zhang discloses high priority frames (e.g. base layers) are transmitted over the network separately than the low priority frames (col. 3, lines 37-43; col. 7, line 57-col. 8, line 6), wherein the high priority frames are transmitted over the network using a guaranteed

quality of service trunk (e.g. well controlled channel – col. 3, lines 1-12; col. 7, lines 56-63), and wherein the low priority frames are transmitted over the network on a best effort truck (bitstream where the layer can be dropped – col. 3, lines 27-53; col. 10, lines 1-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Li in view of Chiu's teaching and Masaki's teaching to use the teaching as taught by Zhang in order to avoid the lost of frame for base layer if the packet loss or error occurs in the low priority frame (enhancement layer) – see col. 3, lines 33-43).

Regarding claims 34 and 42, the additional limitations of the computer-readable medium and computing device, respectively, as claimed correspond to the limitations as claimed in claim 8, and are analyzed as discussed with respect to the rejection of claim 8.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wang (US 6,499,060) discloses media coding for loss recovery with remotely predicted data units.

Chen et al. (US 6,057,884) discloses temporal and spatial scaleable coding for video object planes.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son P. Huynh whose telephone number is 571-272-7295. The examiner can normally be reached on 9:00 - 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S. Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Son P. Huynh

September 14, 2007